

Large Perforations of Duodenal Ulcers

Sanati Yassine, Mohamed Habib Cherif, Ait Taleb Khalid, Benjelloun Elbachir, Mouaqit Ouadii, El bouhaddouti Hicham, Bouassria Abdesslam, Marghich Omar, Zerhouni Ahmed

Visceral surgery service, Hassan II university hospital, Faculty of medicine and pharmacy of Fez, Sidi mohammed ben abdellah university, Fez, Morocco

Corresponding author : Sanati Yassine

Visceral surgery service, Hassan II university hospital, Faculty of medicine and pharmacy of Fez, Sidi mohammed ben abdellah university, Fez, Morocco

Abstract: *Duodenal ulcer perforations are a common surgical emergency, but literature is silent on the exact definition, incidence, management and complications of large perforations of duodenal ulcers. There are three distinct types of perforations of duodenal ulcers that are encountered in clinical practice. The first, are the 'small' perforations that are easy to manage and have low morbidity and mortality. The second are the 'large' perforations, that are also not uncommon, and omental patch closure gives the best results even in this subset of patients. The word 'giant' should be reserved for perforations that exceed 3 cm in diameter, and these are extremely uncommon.*

INTRODUCTION:

Duodenal ulcer perforations are a common cause of peritonitis. The classic, pedicled omental patch that is performed for the 'plugging' of these perforations was first described by Cellan-Jones in 1929 [1], although it is commonly, and wrongly attributed to Graham, who described the use of a free graft of the omentum to repair the perforation in 1937 [2]. In this, a strand of omentum is drawn over the perforation and held in place by full thickness sutures placed on either side of the perforation, and this procedure has become the "gold standard" for the treatment of such perforations. However, occasionally, large perforations of the duodenum may be encountered in which there exists the threat of post-operative leakage following closure by this simple method [3,4]. Here, other surgical options such as partial gastrectomy, jejunal serosal patch, jejunal pedicled graft, free omental plug, suturing of the omentum to the nasogastric tube, proximal gastrojejunostomy, or, even, gastric disconnection may be deemed necessary for adequate closure [3-8].

CASE PRESENTATION :

A case is reported of a 60-year-old chronic smoker who had been experiencing abdominal pain for over a month. The symptoms worsened one week before admission to the emergency department, becoming very intense, especially in the epigastric and right hypochondrium regions.

The patient was admitted in a state of septic shock; clinically, he was tachycardic, hypotensive, with generalized abdominal guarding. Laboratory tests indicated a significant inflammatory biological syndrome, and an abdominal CT scan revealed a parietal defect in the duodenal bulb and a defect at the base of the gallbladder complicated by a subhepatic abscess extending to the hepatic hilum, with a large amount of intra-peritoneal effusion.

In view of these clinical and paraclinical findings, the patient was taken to the operating room after stabilization in the resuscitation room. A midline laparotomy, extending above the umbilicus, was performed. Exploration revealed a large amount of bile effusion. After sampling and aspiration of the effusion, as well as adhesiolysis, a wide duodenal perforation (Fig 1-2), likely of ulcer origin, causing a complete gastroduodenal disconnection, was discovered. A cholecystoduodenal fistula was confirmed by the presence of a sclerotic and atrophic thickened duodenal collar on the gallbladder (Fig 3).

The surgical procedure involved an antrectomy with cholecystectomy, closure of the duodenal stump with a GIA clamp, creation of a gastroenteroanastomosis, and a feeding jejunostomy, along with lavage and drainage of the peritoneal cavity.

Postoperative follow-up revealed the persistence of a biliary fistula, managed medically with good progress. The patient was discharged two weeks after surgery.

The pathology confirmed the ulcerative origin of the duodenal perforation, complicating a cholecystoduodenal fistula.

DISCUSSION:

Duodenal ulcer perforation is a common surgical emergency in our part of the world. The overall reported mortality rate varies between 1.3 to nearly 20 % [9-11] in different series, and recent studies have shown it to be around 10 % [11]. Factors such as advancing age, concomitant disease, preoperative shock, size of the perforation, delay in presentation and operation, have all been defined by various authors to be risk factors for mortality in such a situation [9-11]. Although the size of a perforation is an important measure in determining the outcome, a review of literature failed to reveal, any accepted definition of either small or giant perforations of duodenal ulcers. Neither could we come across any specific recommendations regarding the management of giant / large perforations, which are said to be "difficult" to manage and have anecdotally been associated with high leak rates and mortality. This is in contrast to the well accepted and documented definition of giant duodenal ulcers (more than 2 cm in size), which may or may not perforate, but are usually considered to be an indication for definitive, elective ulcer surgery [8,12].

Commonly, duodenal ulcer perforations are less than 1 cm in greatest diameter, and as such, are amenable to closure by omentopexy [3]. Our experience does seem to validate this, and this subset of 'small' perforations does seem to have the best outcome. It is the perforations that are larger that have been the cause of much confusion in their definition and management. The size of such 'giant' sized perforations has arbitrarily been defined by various authors as being greater than 0.5 cm [7], 1cm [3,4], or 2.5 cm [6] in greatest diameter, but we failed to uncover any specific size in available English language literature beyond which to label these perforations as "giant". These perforations are considered particularly hazardous because of the extensive duodenal tissue loss and surrounding tissue inflammation, which are said to preclude simple closure using omental patch, often resulting into post-operative leak or gastric outlet obstruction [3,4]. The tendency to leak may further be aggravated by the high intraluminal pressures, extrusion of the duodenal mucosa through the closure, and, autodigestion by the pancreatic enzymes and bile, thereby further compromising an already sick patient [13].

In the absence of any specific definition and guidelines regarding the management of such large / giant perforations in literature, different authors have recommended varied surgical options from time to time, based on their experience and research. These have included resection of the perforation bearing duodenum and the gastric antrum in the form of a partial gastrectomy, with reconstruction as either a Billroth I or II anastomosis, or the more morbid procedure of gastric disconnection in which vagotomy, antrectomy, gastrostomy, lateral duodenostomy and feeding jejunostomy are performed, with restoration of intestinal continuity electively after 4 weeks of discharge [8]. Others have recommended conversion of the perforation into a pyloroplasty, or, closure of the perforation using a serosal patch or a pedicled graft of the jejunum, or, the use of a free omental plug to patch the defect, and even, suturing of the omentum to the nasogastric tube [3-8]. Proximal gastrojejunostomy and / or vagotomy may be added to these procedures to provide diversion and a definitive acid reducing procedure respectively [8]. However, as can be appreciated, each of these procedures not only prolongs the operating time, but also requires a level of surgical expertise that may not be available in the emergency [6]. In addition, each of these procedures has its own morbidity that may add up significantly to alter the final outcome of the patient, and more importantly, none of them is immune to the risk of leak in the post-operative period, which has been the main concern against performing the omental patch in larger perforations [3,4].

CONCLUSION :

Duodenal perforations should be classified as small, large or giant according to their size encountered at laparotomy. In the emergency setting, such patients are often seriously ill and it is not advisable to perform major surgical procedures on them. The Cellan-Jones omental patch is simple, can be performed in a relatively short time, and remains dependable even for the closure of large sized perforations (i.e. perforations up to 3 cm in size). The addition of a feeding jejunostomy and placement of a tube drain in the Morrison's space may offer a further sense of "security" to the operating surgeon, keeping by open the option of maintaining the nutrition of the patient as well as creating a controlled duodenal fistula in case of a post-operative leak. The word "giant" should be reserved only for perforations that exceed 3 cm in diameter.

BIBLIOGRAPHIE :

1. Cellan-Jones CJ: A rapid method of treatment in perforated duodenal ulcer. *BMJ* 1929, 36:1076-7.
2. Graham RR: The treatment of perforated duodenal ulcers. *Surg Gynecol Obstet* 1937, 64:235-8.

3. Chaudhary A, Bose SM, Gupta NM, Wig JD, Khanna SK: Giant Perforations of Duodenal Ulcer. *Ind J Gastroenterol* 1991, 10:14-5.
4. Karanjia ND, Shanahan DJ, Knight MJ: Omental patching of a large perforated duodenal ulcer: a new method. *Br J Surg* 1993, 80:65.
5. McIlrath DC, Larson RH: Surgical management of Large Perforations of the Duodenum. *Surg Clin North Am* 1971, 51:857-61.
6. Sharma D, Saxena A, Rahman H, Raina VK, Kapoor JP: 'Free Omental Plug': A Nostalgic Look at an Old and Dependable Technique for Giant Peptic Perforations. *Dig Surg* 2000, 17:216-8.
7. Jani K, Saxena AK: Management of Large Sized Duodenal Peptic Perforations by Omental Plugging – A New Technique: A Prospective Randomised Study of 100 patients. *Ind J Surg* 2000, 62:134-8.
8. Cranford CA, Olson RO, Bradley EL III: Gastric Disconnection in the Management of Perforated Giant Duodenal Ulcer. *Am J Surg* 1988, 155:439-42.
9. Hermansson M, von Holstein CS, Zilling T: Surgical approach and Prognostic factors after peptic ulcer perforation. *Eur J Surg* 1999, 165:566-72.
10. Boey J, Choi KY, Alagaratnam TT, Poon A: Risk Stratification in Perforated Duodenal Ulcers. A Prospective Validation of Predictive Factors. *Ann Surg* 1986, 205:22-6.
11. Rajesh V, Sarathchandra S, Smile SR: Risk factors predicting operative mortality in perforated peptic ulcer disease. *Tropical Gastroenterol* 2003, 24:148-50.
12. Nussbaum MS, Schusterman MA: Management of Giant Duodenal Ulcer. *Am J Surg* 1985, 149:357-61.
13. Walley BD, Goco I: Duodenal Patch Grafting. *Am J Surg* 1980, 140:706-8.



Fig 1: Initial Perioperative Findings



Fig 2: after adhesiolysis showing the large duodenal perforation



Fig 3: gastroduodenal disconnection